



September 08, 2021

Jenny Raitt, Director, Department of Planning and Community Development

Town of Arlington
50 Pleasant Street
Arlington, MA 02476

Re: Thorndike Place - Arlington, MA
Comprehensive Permit Civil / Wetland Peer Review #5

Dear Ms. Raitt:

BETA Group, Inc. (BETA) continues to perform peer review of the environmental, civil and stormwater related elements of the site plans and supporting engineering documents for the above-referenced project. This letter is in response to materials submitted by the Applicant on August 31, 2021. The review is based on the following materials:

- *Thorndike Place Comprehensive Permit* stamped plans Dorothy Road, Arlington MA – 14 Sheets dated March 13, 2020, revised August 27, 2021 prepared by BCS Group;
- Thorndike Place Stormwater Report revised August 2021
- Plan of Potential Conservation Parcel revised August 27, 2021
- Plan showing Thorndike Place Vehicle Turning Movements revised August 27, 2021
- Response to BETA Comments letter from BSC Group dated August 31, 2021
- Response to Town Comments letter from BSC Group, dated August 31, 2021
- Wetland Delineation Memorandum and Wetland Delineation Field Data Forms, prepared by BSC Group, dated October 19, 2020, Revised January 18, 2020;
- FEMA Flood Insurance Study, Middlesex County, Revised June 6, 2016;
- Town of Arlington Zoning Bylaw with Amendments through April 2016;
- Town of Arlington Wetland Protection Bylaw, Article 8 and Regulations for Wetland Protection, June 4, 2015;
- MassDEP Stormwater Management Standards (SMS);

GENERAL

BETA Group was retained to perform a civil / site / stormwater design peer review of the Comprehensive Permit application for the proposed Thorndike Place 40B housing project. Part of this review includes an overall analysis of the existing site to confirm its suitability for the proposed project. Stormwater calculations have been provided and proposed utilities are shown on the site plans.

BETA conducted a detailed site evaluation on November 12, 2020 to verify the data provided in the supplemental materials provided by BSC. The visit included confirmation of wetland boundaries, previously identified isolated wetland areas, review of wildlife habitat, and examination of the site for evidence of potential wetland conditions underlying fill material.

BETA previously provided comments to the Zoning Board in a letter dated June 8, 2021. Those comments were related to the latest site plans from June 2021. A follow-up review of supplemental information submitted by the Applicant was provided to the Board on August 3, 2021.

EXISTING CONDITIONS

The project site includes multiple parcels that total approximately 17.7-acres of land located between Dorothy Road, Burch Street, and the Concord Turnpike (Route 2) in Arlington, Mass. Dorothy Road and Burch Street are both residential neighborhood streets featuring predominantly single-family houses. The site is essentially undeveloped woodland area that has been a location for the dumping of earthen fill and assorted debris throughout the years. Site topography generally slopes southerly towards the Concord Turnpike.

A review of the current FEMA Flood Insurance Study for Middlesex County indicates that a majority of the site is located within the mapped 100-year flood plain Zone AE (Elev. 6.8) and that almost all of the site is located within the 500-year flood plain Zone X.

PROPOSED PROJECT

The proposed project, as revised, includes the construction of a 124-unit 4-story senior living building and six (6) duplex townhouse units located along Dorothy Road. Also included are associated access driveways, parking areas, utilities, infrastructure, stormwater management system and resource area mitigation and AURA and upland habitat restoration. The current project design involves limited site improvement in the AURA outer 75' Restricted Zone including a small section of the multi-unit building, access circulation, and stormwater management discharge. Resource area mitigation and habitat restoration is also proposed in the AURA. The 25' No Disturb Zone will remain intact.

June 8, 2021 Revised Submission

1. The Applicant has submitted select plans including Layout and Materials Plan and Grading & Drainage Plan in support of the latest revisions.

Recommendation: A full set of plans should be submitted to the Board reflecting the proposed revisions.

Applicant response: Revised Layout & Materials, Grading & Drainage and Utility Plans (C-103, C-105 and C-106) are included with this response. In addition, a revised Potential Conservation Parcel and Vehicle Turning Exhibits are attached. A complete set of plans and stormwater report will be submitted by August 24, 2021.

BETA Response: No further comment at this time. We suggest that the full plan set and Stormwater Report be reviewed for consistency.

Applicant response (8/31/2021): Please see full Plan Set and revised stormwater report submitted with this letter.

BETA Response (9/8/2021): Plans and Stormwater Report have been submitted. No further comment.

2. Access to the front of the proposed senior living building is provided by an approximately 200-foot long driveway with a cul-de-sac turn around. The proposed building extends about 215 feet beyond the end of the driveway. It is not clear how the fire department will access the entire front of the building for fire-fighting purposes.

Recommendation: The Applicant should confirm with the fire chief that the site as proposed will provide adequate access for firefighting. The chief's confirmation should be provided to the Board in writing.

Applicant Response: Feedback was provided by the Fire Chief where he indicated that if the proposed project can accommodate the size of the ladder truck for emergency access and the project meets State Fire Code requirements, then at this juncture there is not any further review required. The Fire Department will review final plans and construction documents as part of the regular interdepartmental review that would occur once the project is in a permitting phase (building permit). BSC has confirmed that the Arlington Fire Department ladder truck can navigate the west, south and east sides of the site via the main driveway and emergency vehicle access drive. Additionally, the ladder truck can access the driveway to the senior living building and exit using the driveway as a hammerhead turnaround. Truck turning exhibits are attached to this letter. The site and building will meet the State Fire Code and provide a compliant route for emergency vehicles to access the building.

BETA Response: We defer to the Fire Chief. We note that the Truck Turning Exhibit shows the ladder truck accessing the driveway to the front of the senior living building, but it is not clear how far the truck can proceed along the driveway. The fire chief should be satisfied that there is adequate access to the front of the building.

Applicant Response (8/31/2021): Updated fire truck turning movement plans are attached demonstrating fire truck access to the front of the building along the front driveway.

BETA Response (9/8/2021): The latest truck turning movement plans show access for a fire truck to the cul-de-sac with the ability to back out by making a three-point turn. The backing distance is about 150 feet which is consistent with the requirements in 527 CMR 18. The Fire Chief will have final approval.

3. A portion of the perimeter emergency access road is shared with the proposed driveway access for Townhouse 6 (easterly building). Parking must be prohibited along this portion of the emergency access to ensure that it remains clear for emergency vehicles.

Recommendation: The Applicant should include appropriate signage and pavement markings to restrict parking.

Applicant Response: Signage and pavement markings restricting parking on the emergency vehicle access drive adjacent to the easterly duplex will be provided.

BETA Response: No Parking pavement markings and signs are included on the Layout Plan Sheet C-103. No further comment.

4. It appears that there is an existing utility pole located in the proposed driveway for Townhouse units 3 & 4 that will require relocation.

Recommendation: The new pole location should be shown on the plans and coordinated with the utility company.

Applicant Response: The existing utility pole conflict with the proposed driveway location is noted on the Layout & Materials Plan (C-103) and is noted that the relocation of the pole is to be coordinated with the utility company.

BETA Response: No further comment.

5. The proposed project as revised results in filling within the existing 100-year floodplain. Two areas of compensatory flood storage are proposed south of the senior living building. The areas as proposed appear to provide a compensation ration of 2:1 which meets the Town's requirements. Both areas appear to be partially within the 100-foot AURA but outside the 25-foot No Disturb Zone.

Recommendation: The Applicant should confirm that the Conservation Commission is satisfied with the compensatory storage areas as proposed.

Applicant Response: The proposed compensatory flood storage areas provide the required 2:1 storage volume. Additionally, the proposed compensatory storage areas are in areas that have been previously disturbed by the prior homeless encampment and are overrun with invasive species. BETA has provided the following comments that support the proposed location of the compensatory storage areas with recommendations for revegetation:

"BETA's wildlife biologist reviewed the revised plans to evaluate the impacts of the newly proposed compensatory flood storage areas. These areas both located south/southeast of the main building in a heavily wooded area on the site. Currently these regions are densely vegetated and upslope of isolated wetland WF-D series. This serves as a water filtration system to the downstream wetlands as well as preventing erosion by holding on to sediment and slowing stormwater. However, the vegetation is mostly invasive species and an abundance of dead trees. While the dense vegetation and standing deadwood provides good nesting habitat, this feature exists in other areas of the property.

Constructing these compensatory flood storage areas will most likely involve clearing any existing vegetation and re-grading the area creating the opportunity to replant and seed the area with native species to add productivity the remaining area. Dense shrubs such as high bush blueberry can provide dense cover and food sources for wildlife for example. Pollinator species should also be considered to replace what will be lost in the surrounding area during clearing. This will also be an important feature for retaining water and nutrients in these areas and prevent standing water which is a breeding ground for insects."

BETA Response: The compensatory storage areas as shown provide compensation at a 2:1 ratio. No further comment.

Stormwater Management

The Stormwater Management design for the site is similar to the previous design. Runoff will be collected in a series of catch basins and trench drains and directed to subsurface infiltration systems. A single large infiltration system is proposed for the senior living building and driveways. Separate small infiltration systems are proposed for the Townhouse driveways. A portion of the roof of the senior living building will be used to detain stormwater. A small raingarden is proposed at the easterly side of the site.

6. Each discharge to the large infiltration system (IFN-1) is treated by a water quality unit and/or deep sump catch basing to remove total suspended solids before the runoff is infiltrated. This is consistent with the guidance in the Massachusetts Stormwater Policy. However, the trench drain/infiltration systems for the townhouse units do not provide water quality treatment. These systems service a small area. However, accumulation of sediment over time will reduce the effectiveness of infiltration.

Recommendation: The Applicant should consider providing a sump between the driveway trench drains and infiltration systems to allow removal of some total sediment solids.

Applicant Response: A 30" diameter drain manhole with a 2' sump and hood has been added between each trench drain and infiltration system and is shown on the Grading and Drainage Plan (C-105).

BETA Response: The sump MH has been provided as suggested. A detail should be provided in the final plan set.

Applicant Response (8/30/21): A detail has been provided on Sheet C-202 of the attached Plan Set.

BETA Response: Detail provided. No further comment.

7. The location of floor drains and connection to the sanitary sewer system should be shown to ensure that they do not conflict with other subsurface utilities.

Recommendation: Show garage floor drain connections on the plans.

Applicant Response: Location of the oil/water separator and sump pump is shown on the Utility Plan (C-106).

BETA Response: No further comment.

8. The top elevations for infiltration systems INF-5 and INF-6 appear to be near the finish grade of the driveways.

Recommendation: The Applicant should consider if these systems need to be lowered to accommodate the driveway construction.

Applicant Response: Elevations of each system have been revised accordingly.

BETA Response: No further comment.

Stormwater Report

9. In general, the revised stormwater analysis appropriately models the new design. NOAA 14+ rainfall data has been used in the analysis. Overall post development peak runoff rates for the site are mitigated to be equal to or lower than predevelopment peak runoff rates.
10. Stormwater Management Standards 1 -10 appear to be satisfied.
11. As previously noted, the analysis indicates that post development runoff rates for the entire site are mitigated. However, the analysis also indicates that post development runoff rates towards Dorothy Road are higher than predevelopment runoff rates for the 100-year storm. Predevelopment Subcatchment 2S (*flow to street*) shows a runoff rate of 1.3 CFS. Post development Subcatchment 7S (*flow to street*) shows a runoff rate of 1.9 cfs.

Recommendation: Given the sensitivity of flooding issues on Dorothy Road, the post development runoff rate flowing towards Dorothy Road should not exceed predevelopment rates for any storm. Mitigation of the post development runoff should be provided.

Applicant Response: The area in front of the duplex townhouses has been regraded to direct more of each driveway and lawn to the trench drains and infiltration systems. This results in peak flow rates to Dorothy Road that do not exceed existing conditions for all storm events analyzed.

BETA Response: The revised analysis will be reviewed when the revised stormwater Report is submitted.

Applicant Response (8/30/21): Please see attached, revised Stormwater Report.

BETA Response (9/8/2021): The revised analysis included in the latest Stormwater Report shows that post development peak flows to Dorothy Road have been mitigated to not exceed predevelopment flow rates. No further comment.

12. The top elevation for the proposed rain garden (Pond 3P) is shown as elevation 7.0' in the analysis. The 100-year water service elevation is calculated to be 6.39'. The Grading and Drainage Plan indicated the top elevation as 6.3 indicating the rain garden would overtop in the 100-year storm.

Recommendation: The plans and analysis should be coordinated to accurately reflect the proposed condition.

Applicant Response: To more accurately reflect the grading around the rain garden, the 7' elevation has been removed from the HydroCAD with the top of basin elevation set at 6.5 as shown on the Grading Plan. There is a broad crested weir at elevation 6.3 on the west side of the rain garden, which is both modeled in the HydroCAD and shown on the Grading Plan.

BETA Response: The revised analysis will be reviewed when the revised stormwater Report is submitted.

Applicant Response (8/30/21): Please see attached, revised Stormwater Report.

BETA Response (9/8/2021): The grading for the rain garden shown on Plan Sheet C 104 has been revised and is consistent with the analysis in the revised Stormwater Report. No further comment.

13. The bottom elevation of infiltration system INF-1 is proposed to be elevation 6.0'. Groundwater elevation appears to be approximately elevation 3.0'. As noted in previous comments, due to the variation in groundwater at various test pits, BETA recommends that additional test pits be conducted in the infiltration areas during the groundwater season.

Recommendation: Conduct additional test pits to confirm groundwater elevation.

Applicant Response: The Applicant will perform additional test pits to confirm seasonal high groundwater prior to application for a building permit. The test pits will be coordinated with the geotechnical investigation for the building and will be conducted during seasonal high groundwater conditions which will be confirmed by monitoring nearby USGS wells.

BETA Response: Any revisions required by the information from additional test pits will be evaluated once the information is available.

Applicant Response (8/30/21): If any revisions to the infiltration system design are required based on the results of additional groundwater investigations, revised plans and stormwater calculations will be provided to the Town for review prior to building permit.

BETA Response (9/8/2021): No further comment pending review of the test pit data.

14. Groundwater mounding calculations are provided for infiltration system INF-1 since the bottom of the system is less than 4 feet above the anticipated groundwater table. The analysis indicates that the lateral extent of the ground water mound will extend to the foundations of four townhouse units as well as the foundation of the senior living building. The mounding is a localized effect and should not impact overall groundwater elevations in the area. However, it should be considered in the design of the building foundations.

Applicant Response: Comment is noted and the infiltration system impacts will be considered in the foundation design of the townhouses, garages/carports and the senior living building.

BETA Response: No further comment.

1. New Comment (8/17/2021) – Utility Plan Sheet C-106 shows a proposed hydrant near the southeast corner of the building along the perimeter access road. The hydrant appears to be susceptible to being hit by maintenance or emergency vehicles.

Recommendation: Provide bollards to protect the hydrant. The O&M plan should include requirements to clear snow from around the hydrant.

Applicant Response (8/30/21): Bollards have been added in front of the hydrant as recommended. See Sheet C-106. Requirements for snow removal from around on-site hydrants have been added to the Long-Term Pollution Prevention & Operation and Maintenance Plan in the attached, revised Stormwater Report.

BETA Response (9/8/2021): The bollards have been shown on the plans. The final plan set should include a detail of the bollard installation.

2. New Comment (9/8/2021) – The general notes on Sheet C101, Site Preparation Plan, should reference the approved Construction Management Plan.
3. New Comment (9/8/2021) – Designated snow storage areas are shown on the Sheet C 103, Layout and Materials Plan.

Recommendation: The Long-Term Pollution Prevention Plan should reference that snow storage can only occur in designated areas shown on Sheet C 103.

CONCLUSIONS

The revised August 31, 2021 submission generally addresses previous comments. A full plan set and revised stormwater report were submitted to the Board on August 31, 2021. Several new comments are provided based on a review of the complete plan set. These comments are fairly minor and could be included as Conditions of Approval in the Comprehensive Permit with the understanding that all comments will need to be addressed to the satisfaction of the Board and the Town of Arlington before site development can begin. Any future revisions that affect the design of the proposed stormwater system should be supported by revised analysis and calculations.

We recommend that per previous comments that a Construction Management Plan (CMP) be submitted for the currently proposed development. The CMP should address construction impacts, phasing, scheduling and logistics.

BETA continues to note that the seasonal high groundwater elevation, particularly in the location of the stormwater BMPs, needs to be confirmed prior to start of site development. BETA's review of the test pit data provided by the Applicant suggests that further evaluation of soil and groundwater conditions should be conducted and potentially witnessed by the Town and / or their representative.

Jenny Raitt, Director, Dept of Planning and Community Development

September 8, 2021

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If you have questions about any of these comments, please feel free to contact us.

Very truly yours,
BETA Group, Inc.



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cc: Douglas W. Heim, Arlington Town Counsel
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